

WHAT IS CLAIMED IS:

1. A semiconductor device, comprising:  
a concave portion formed in a semiconductor  
substrate;

5 a first gate insulating film formed selectively on  
said semiconductor substrate;

sub A19  
a second gate insulating film formed in at least  
the bottom surface of said concave portion;

10 a first conductive film formed on said first gate  
insulating film; and

a second conductive film formed on said second  
gate insulating film.

2. The semiconductor device according to claim 1,  
wherein the second gate insulating film and the second  
15 conductive film are formed on the bottom surface of the  
concave portion, on at least one side surface of the  
concave portion and on the semiconductor substrate, and  
the surface of the first conductive film is flush with  
the surface of the second conductive film formed on the  
20 semiconductor substrate.

3. The semiconductor device according to claim 1,  
wherein the second gate insulating film is formed in  
the corner portion of the concave portion.

25 4. The semiconductor device according to claim 1,  
wherein an insulating film is formed on the second  
conductive film, and the concave portion is filled with  
the insulating film, the second gate insulating film

and the second conductive film.

5           5. The semiconductor device according to claim 1,  
wherein the concave portion is filled with the second  
gate insulating film and the second conductive film,  
and the surface of the second conductive film is  
substantially flat.

6. The semiconductor device according to claim 1,  
wherein the semiconductor substrate is an SOI  
substrate.

10           7. The semiconductor device according to claim 1,  
further comprising:

an element isolating region formed within the  
semiconductor substrate such that the second gate  
insulating film and the second conductive film are  
15 allowed to extend over said element isolating region;

a contact electrically connected to that portion  
of the second conductive film which is positioned on  
the element isolating region; and

a wiring electrically connected to said contact.

20           8. The semiconductor device according to claim 1,  
wherein a plurality of concave portions are formed in  
the semiconductor substrate such that these concave  
portions are filled with the second gate insulating  
film and the second conductive film, and the surface of  
25 the second conductive film is substantially flat.

9. The semiconductor device according to claim 1,  
wherein a plurality of gate electrodes each consisting

of the second conductive film is formed in said concave portions,

10. The semiconductor device according to claim 1, wherein the impurity concentration in the second  
5 conductive film is higher than that in the semiconductor substrate.

11. The semiconductor device according to claim 1, wherein said second insulating film functions as the insulating film for the anti-fuse portion or for the  
10 capacitor element.

12. A method of manufacturing a semiconductor device, comprising the steps of:

forming first, second and third concave portions in a semiconductor substrate;

15 burying an insulating film in said first, second and third concave portions, followed by planarizing the surface of said insulating film until the surface of the semiconductor substrate is exposed to the outside so as to form an element isolating region within the  
20 first concave portion;

removing the insulating film from the second and third concave portions so as to form a aligning mark portion in the second concave portion;

25 forming a gate insulating film on the entire surface;

forming a conductive film on said gate insulating film; and

selectively removing said conductive film so as to form a first gate electrode on the semiconductor substrate, and to form a second gate electrode in the third concave portion.

5           13. The method of manufacturing a semiconductor device according to claim 12, wherein a gate insulating film is formed on the entire surface, with the insulating film formed within the third concave portion partly left unremoved.

10           14. The method of manufacturing a semiconductor device according to claim 12, wherein the second gate electrode is formed on the bottom surface of the third concave portion, on the both side surfaces or one side surface of the third concave portion, and on the  
15 semiconductor substrate.

15           15. The method of manufacturing a semiconductor device according to claim 12, wherein the second gate electrode is formed in a manner to fill the third concave portion.

20           16. The method of manufacturing a semiconductor device according to claim 12, wherein the second gate electrode is formed in a manner to extend from within the third concave portion onto the element isolating region, and the contact is formed in that portion of  
25 the second gate electrode which is positioned on the element isolating region.

17. The method of manufacturing a semiconductor

device according to claim 12, wherein a plurality of third concave portions are formed.

18. The method of manufacturing a semiconductor device according to claim 12, wherein a plurality of second gate electrodes are formed within the third concave portion.

19. The method of manufacturing a semiconductor device according to claim 12, wherein the impurity concentration of the conductive film is higher than that of the semiconductor substrate.

20. The method of manufacturing a semiconductor device according to claim 12, wherein the second gate electrode functions as the gate electrode for the anti-fuse portion or for the capacitor element.

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